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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,697	01/14/2004	Homer Eaton	ROMINC.004A	4972

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EXAMINER

FITZGERALD, JOHN P

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

41

Office Action Summary	Application No.	Applicant(s)	
	10/758,697	EATON, HOMER	
	Examiner	Art Unit	
	John P. Fitzgerald	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18, 21-24, 31-39, 41 and 45-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39, 41 and 45-72 is/are allowed.
- 6) ☒ Claim(s) 1-15, 21-24, 31, 73 and 74 is/are rejected.
- 7) ☒ Claim(s) 16-18 and 32-38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/17/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 17 January 2006 was filed after the mailing date of the non-final office action on 15 August 2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Response to Arguments

2. Applicant's arguments filed 17 January 2006 have been fully considered but they are not persuasive. Applicant's main argument is that the elements (12W, 22W, 32W, 42W, 52W 62W, 84W, 85W, 94W) disclosed by Slocum are "not compliant members" recited in claims 1, 73 and 74). The Examiner respectfully disagrees and directs the Applicant to col. 10, lines 15-23 of Slocum. There it clearly states that the elements can include: "magnetic levitation, air bearings, ball bearings, wire supports (i.e. wires or cables, the terms being interchangeable in this specification; the term wire means a ***flexible*** (emphasis added) connecting member that can on transmit tensile forces and includes cables and chains), or any combinations thereof." Therefore, one must conclude that the elements (12W, 22W, 32W, 42W, 52W 62W, 84W, 85W, 94W) are inherently "compliant" that is, flexible. Furthermore, one can easily argue that all materials are inherently "compliant" or flexible, that is, all elements employed have inherent material properties, that when exposed to a force will yield and produce a stress and associated strains, based on its Young's modulus, thus producing some flexibility or compliancy.

3. In specific regards to Applicant's arguments regarding the rejection of claims 73

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and 74 in view of Carwardine, Jacobsen and Akeel references, the Examiner must disagree that the references do not disclose an “articulated arm” or “measuring arm.” First, the references clearly show an “articulated arm” made up of various elements and joints. Applicant should also note that recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Secondly, the claims employ functional language such as “for positioning” and “to reduce stress.” Functional recitations have been given little patentable weight because they fail to add any structural limitations and thereby regarded as intended use language. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. *In re Finstewalder*, 436 F.2d 1028, 168 USPQ 530 (CCPA 1971); *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) (“The manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself.”); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). When interpreting functional language, if the prior art is capable of performing the claimed function-even if not directly disclosed-it anticipates. *In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997); *In re Sinex*, 309 F.2d 488. Thirdly, and most importantly, as pointed out above, all the structure is present, which a requirement of U.S.C. § 102(b), and as such, meets the limitations of the claims, and as such, are capable of functioning as a “measuring arm.”

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

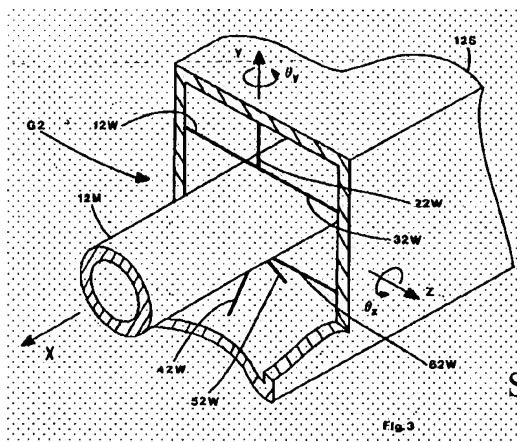
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

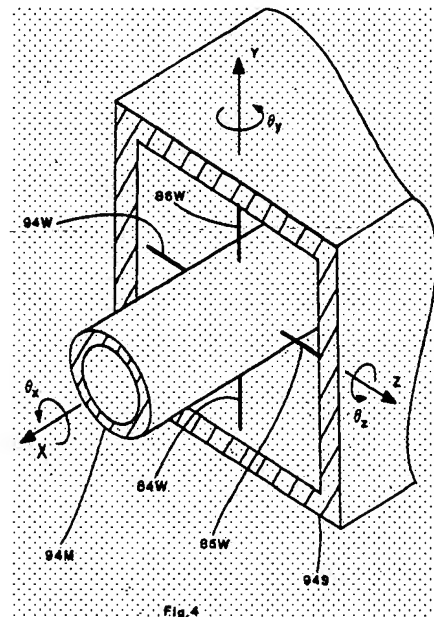
5. Claims 1, 6-15, 21-24, 31, 73 and 74 are rejected under 35 U.S.C. § 102(b) as being anticipated by US 4,676,002 to Slocum. Slocum teaches a positioning system (Figs. 1-20) and method for positioning an articulated measuring arm having an articulated supporting arm (1S, 2S, 3S, 4S, 5S and 6S) comprising of plurality of jointly interconnected support arm segments moveable about a plurality of axes; a plurality of compliant members (12W, 22W, 32W, 42W, 52W 62W, 84W, 85W, 94W) (see Figs. 3 and 4 below) positioned on the supporting arm; and an articulated measuring arm (1M, 2M, 3M, 4M, 5M and 6M) comprising a plurality of jointly interconnected measuring arm segments capable of a plurality of degrees of freed of movement and supported by the compliant members wherein the compliant members provide a yielding characteristic (i.e. made of a deformable material, as recited in claim 13) as well as a constrained range of alignment (as recited in claim 23) between the articulated supporting arm and the articulated measuring arm allowing for a degree of angular offset between the support arm and the measuring arm segments (Slocum: col. 10, lines 15 to col. 11, line 7) (as recited in claims 1, 10, 11, 73 and 74) as well as positioning and supporting the measuring arm segments with the support segments (as recited in claims 9, 73 and 74); wherein the supporting arm and the measuring arm are co-axially aligned such that the movement of the supporting arm effectuates movement of the measuring arm (as recited

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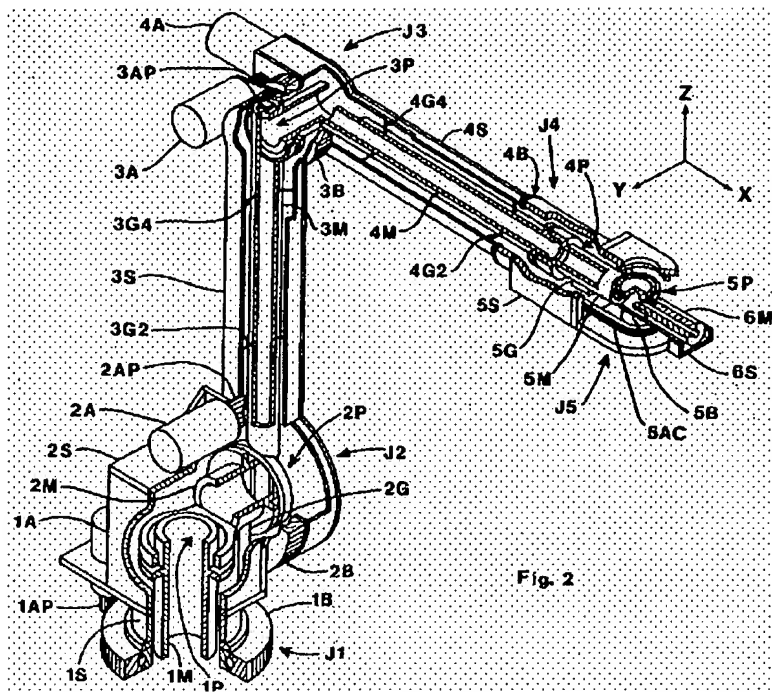
in claims 6 & 7); wherein the support arm segments are shaped to partially contain the measuring arm segments (as recited in claim 8); wherein the compliant members can be chosen from magnetic levitation, air bearings (i.e. gas-filled chamber, as recited in claim 15), ball bearings, wire supports (i.e. metal/spring material, as recited in claim 14) and wherein a controller is configured to direct the positioning of the supporting arm (Slocum: Fig. 18). As to claims 12, 21, 22, 24, 73 and 74, the reduction of mechanical stress (i.e. load sharing/reduction/transfer, thermal isolation (an air gap provides thermal isolation) and physical perturbations/vibrations are inherent features of the compliant members and, as such, the compliant members disclosed by Slocum clearly meet these 'physical' limitations and will function accordingly.



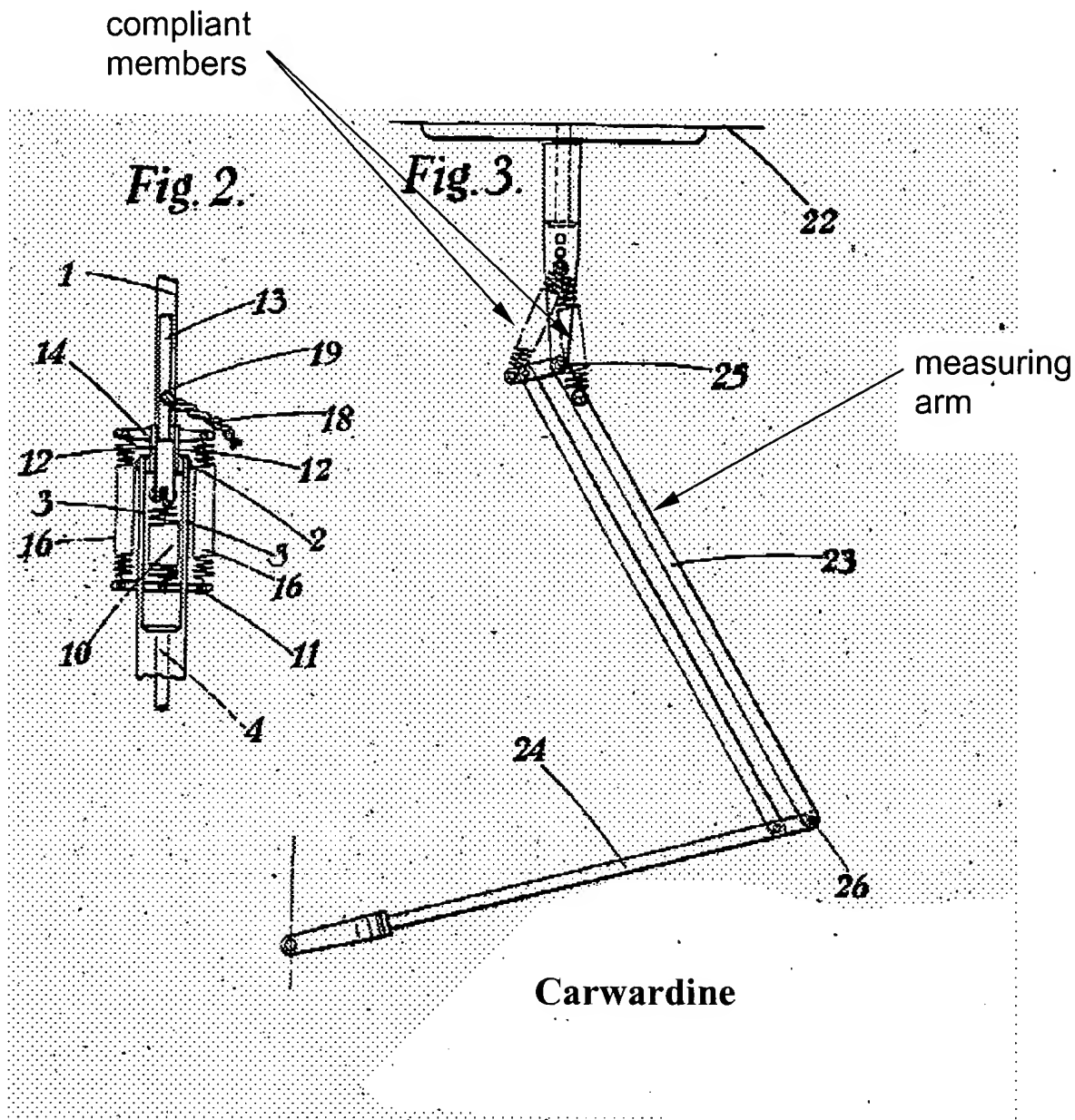
Slocum



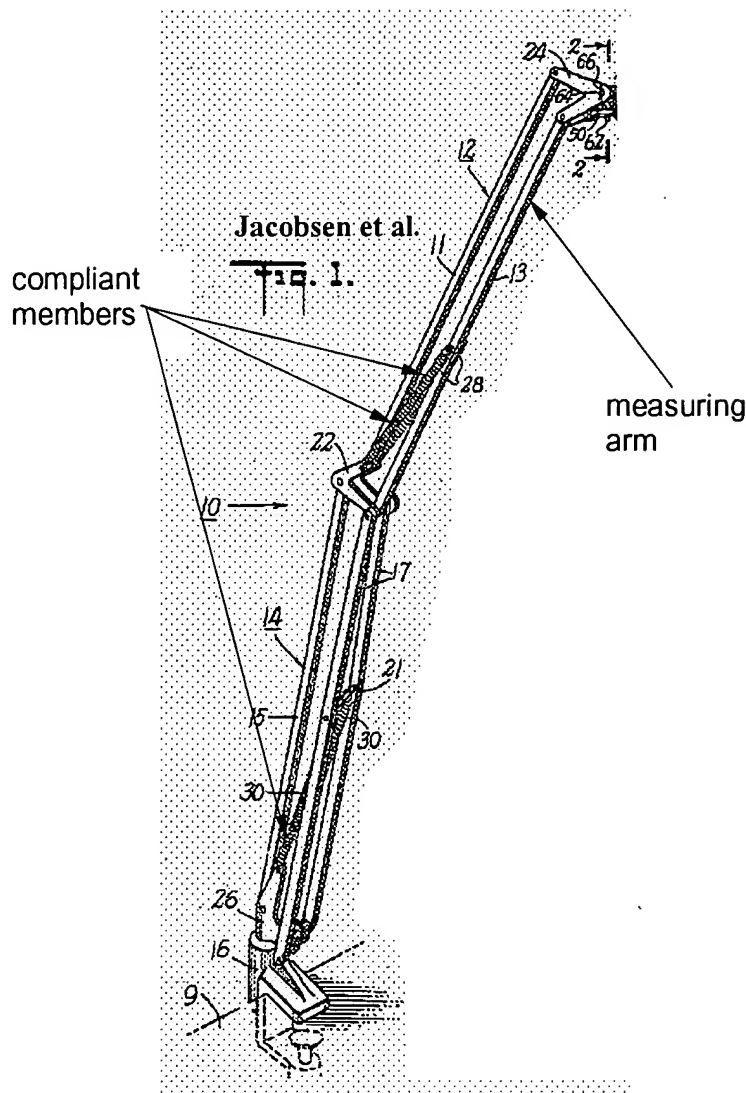
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6. Claim 73 is rejected under 35 U.S.C. § 102(b) as being anticipated by US 2,076,446 to Carwardine. Carwardine discloses a method and apparatus for positioning an articulated measuring arm (23) (see Fig. 3 below) including supporting the arm at a plurality of locations with compliant members (10, 16) to reduce mechanical stress on the arm (i.e. forces balanced and steady positioning of the arm).



7. Claim 73 is rejected under 35 U.S.C. § 102(b) as being anticipated by US 2,787,434 to Jacobsen. Jacobsen discloses a method and apparatus for positioning an articulated measuring arm (13) (see Fig. 1 below) including supporting the arm at a plurality of locations with compliant members (30, 26) to reduce mechanical stress on the arm (i.e. forces balanced and steady positioning of the arm).



Claim Rejections - 35 USC § 103

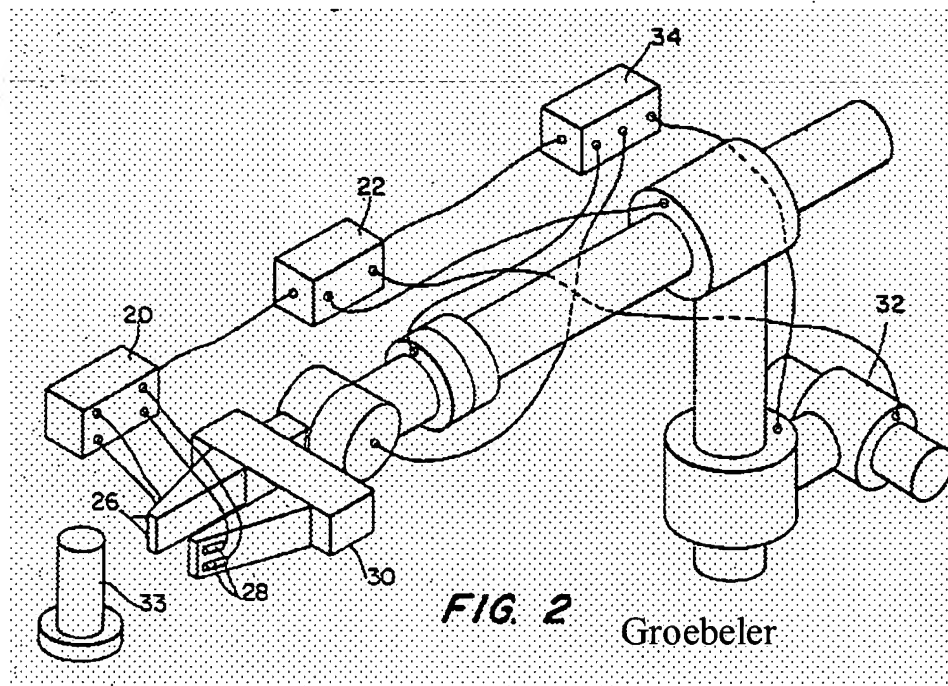
8. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 2-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US 4,676,002 to Slocum as applied to claim 1 above, and further in view of US 4,326,155 to

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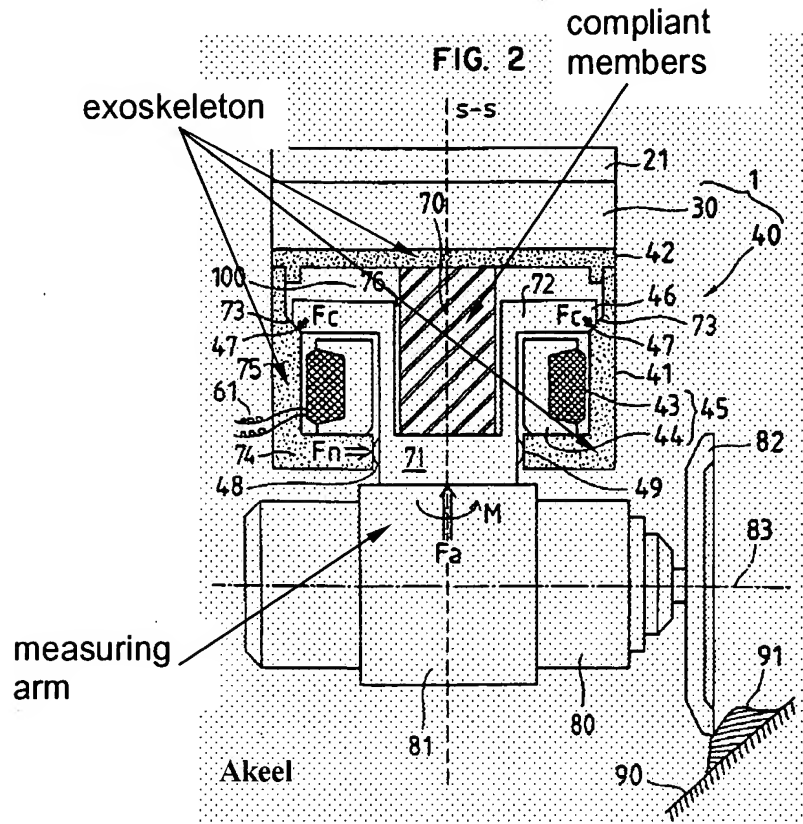
Griebeler. Slocum discloses a positioning system having all of the elements stated previously. However, Slocum does not express disclose the employment of a probe member attached to the articulated arm for measuring coordinate position or acquiring geometry information being a tool or instrument. Groebeler discloses a positioning system (i.e. robotic arm) having a probe mounted in conjunction with a tool (see Fig 2 below) to obtain geometric and/or position information. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a probe and tool having the means to measure geometric and position, as taught by Groebeler, modifying the positioning system disclosed by Slocum, thus providing a sensory guide means for robot actuated tools such as grippers welding heads, positioning, measuring and counting devices, etc. that perform a control function without physically contacting the work piece being sensed (Groebeler: col. 1, lines 10-15).



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10. Claim 74 is rejected under 35 U.S.C. § 103(a) as being unpatentable over US 5,796,229 to Akeel. Akeel discloses a method and apparatus for damping external perturbations (i.e. reduction in vibrations and increased damping) encountered by an articulated measuring arm (71) (see Fig. 2 below) including supporting the arm at a plurality of locations with compliant member (70) that position at least a portion of the articulated the arm within an exoskeletal structure. Akeel discloses the claimed invention except for a plurality (i.e. multiple) elastic elements. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ multiple elastic elements, essentially splitting the compliant member (70) into a plurality of members, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8 (CA7 1977).

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Allowable Subject Matter

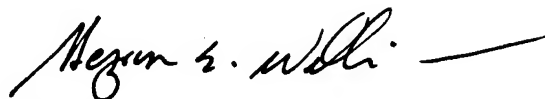
11. Claims 39, 41 and 45-72 are allowed over the Prior Art of record.
12. Claims 16-18 and 32-38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Applicant is invited to review PTO 892 form accompanying this Office Action for relevant art regarding the instant invention.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Fitzgerald whose telephone number is (571) 272-2843. The examiner can normally be reached on Monday-Friday from 7:00 AM to 3:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JP
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